SEQUENCE LISTING

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Chuang-Jiun Chiou
Zhongming Li
Dong-Sheng Chen

<120> COMPOSITIONS AND METHODS FOR TREATING OR PREVENTING PNEUMOCOCCAL INFECTION

<130> 12844-002001

<140> US 10/702,305
<141> 2003-11-06

<150> US 60/424,497
<151> 2002-11-07

<160> 26

<170> FastSEQ for Windows Version 4.0

<210> 1
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<213> Streptococcus pneumoniae

<400> 1

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Ile Lys Glu Gly Asn Gln Leu Pro Asp Glu Phe Val Val Ile Glu Arg
        35                  40                  45
Lys Lys Arg Ser Leu Ser Thr Asn Thr Ser Asp Ile Ser Val Thr Ala
    50                  55                  60
Thr Asn Asp Ser Arg Leu Tyr Pro Gly Ala Leu Leu Val Val Asp Glu
65                  70                  75                  80
Thr Leu Leu Glu Asn Asn Pro Thr Leu Leu Ala Val Asp Arg Ala Pro
                85                  90                  95
Met Thr Tyr Ser Ile Asp Leu Pro Gly Leu Ala Ser Ser Asp Ser Phe
            100                 105                 110
Leu Gln Val Glu Asp Pro Ser Asn Ser Ser Val Arg Gly Ala Val Asn
        115                 120                 125
Asp Leu Leu Ala Lys Trp His Gln Asp Tyr Gly Gln Val Asn Asn Val
    130                 135                 140
Pro Ala Arg Met Gln Tyr Glu Lys Ile Thr Ala His Ser Met Glu Gln
145                 150                 155                 160
Leu Lys Val Lys Phe Gly Ser Asp Phe Glu Lys Thr Gly Asn Ser Leu
                165                 170                 175
Asp Ile Asp Phe Asn Ser Val His Ser Gly Glu Lys Gln Ile Gln Ile
            180                 185                 190
Val Asn Phe Lys Gln Ile Tyr Tyr Thr Val Ser Val Asp Ala Val Lys
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Asn Pro Gly Asp Val Phe Gln Asp Thr Val Thr Val Glu Asp Leu Lys
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Gln Arg Gly Ile Ser Ala Glu Arg Pro Leu Val Tyr Ile Ser Ser Val
225                 230                 235                 240
Ala Tyr Gly Arg Gln Val Tyr Leu Lys Leu Glu Thr Thr Ser Lys Ser
                245                 250                 255
Asp Glu Val Glu Ala Ala Phe Glu Ala Leu Ile Lys Gly Val Lys Val
            260                 265                 270
Ala Pro Gln Thr Glu Trp Lys Gln Ile Leu Asp Asn Thr Glu Val Lys
        275                 280                 285
Ala Val Ile Leu Gly Gly Asp Pro Ser Ser Gly Ala Arg Val Val Thr
    290                 295                 300
Gly Lys Val Asp Met Val Glu Asp Leu Ile Gln Glu Gly Ser Arg Phe
305                 310                 315                 320
Thr Ala Asp His Pro Gly Leu Pro Ile Ser Tyr Thr Thr Ser Phe Leu
                325                 330                 335
Arg Asp Asn Val Val Ala Thr Phe Gln Asn Ser Thr Asp Tyr Val Glu
            340                 345                 350
Thr Lys Val Thr Ala Tyr Arg Asn Gly Asp Leu Leu Leu Asp His Ser
        355                 360                 365
Gly Ala Tyr Val Ala Gln Tyr Tyr Ile Thr Trp Asn Glu Leu Ser Tyr
    370                 375                 380
Asp His Gln Gly Lys Glu Val Leu Thr Pro Lys Ala Trp Asp Arg Asn
385                 390                 395                 400
Gly Gln Asp Leu Thr Ala His Phe Thr Thr Ser Ile Pro Leu Lys Gly
                405                 410                 415
Asn Val Arg Asn Leu Ser Val Lys Ile Arg Glu Cys Thr Gly Leu Ala
            420                 425                 430
Trp Glu Trp Trp Arg Thr Val Tyr Glu Lys Thr Asp Leu Pro Leu Val
        435                 440                 445
Arg Lys Arg Thr Ile Ser Ile Trp Gly Thr Thr Leu Tyr Pro Gln Val
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Glu Asp Lys Val Glu Asn Asp
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<210> 2
<211> 38
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<213> Artificial Sequence

<220>
<223> primer

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<210> 3
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 3
cagtggatcc ttactagtca ttttctacct tatc 34

<210> 4
<211> 38

<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 4
gactgctagc caccatggca aataaagcag taaatgac 38

<210> 5
<211> 36
<212> DNA
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<220>
<223> primer

<400> 5
gactggatcc ttactagaga gttgttcccc aaatag 36

<210> 6
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 6
gactggatcc ttactaatct tctacctgag gatag 35

<210> 7
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 7
gactggatcc ttactattct accttatctt ctacctgag 39

<210> 8
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 8
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<210> 9
<211> 1413
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

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ttgacccatc agggagaaag tattgaaaat cgtttcatca aagagggtaa tcagctaccc 120
gatgagtttg ttgttatcga aagaaagaag cggagcttgt cgacaaatac aagtgatatt 180
tctgtaacag ctaccaacga cagtcgcctc tatcctggag cacttctcgt agtggatgag 240
accttgttag agaataatcc cactcttctt gcggtcgatc gtgctccgat gacttatagt 300
attgatttgc ctggtttggc aagtagcgat agctttctcc aagtggaaga ccccagcaat 360
tcaagtgttc gcggagcggt aaacgatttg ttggctaagt ggcatcaaga ttatggtcag 420
gtcaataatg tcccagctag aatgcagtat gaaaaaatca cggctcacag catggaacaa 480
ctcaaggtca agtttggttc tgactttgaa aagacaggga attctcttga tattgatttt 540
aactctgtcc attcaggcga aaagcagatt cagattgtta attttaagca gatttattat 600
acagtcagcg tagatgctgt taaaaatcca ggagatgtgt ttcaagatac tgtaacggta 660
gaggatttaa aacagagagg aatttctgca gagcgtcctt tggtctatat ttcgagtgtt 720
gcttatgggc gccaagtcta tctcaagttg gaaaccacga gtaagagtga tgaagtagag 780
gctgcttttg aagctttgat aaaaggagtc aaggtagctc ctcagacaga gtggaaacag 840
attttggaca atacagaagt gaaggcggtt attttagggg gcgacccaag ttcgggtgcc 900
cgagttgtaa caggcaaggt ggatatggta gaggacttga ttcaagaagg cagtcgcttt 960
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gttgcgacct ttcaaaatag tacagactat gttgagacta aggttacagc ttacagaaac 1080
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gaattatcct atgatcatca aggtaaggaa gtcttgactc ctaaggcttg ggacagaaat 1200
gggcaggatt taacggctca ctttaccact agtattcctt taaaagggaa tgttcgtaat 1260
ctctctgtca aaattagaga gcgttccggg cttgcctggg aatggtggcg tacggtttat 1320
gaaaaaaccg atttgccact agtgcgtaag cggacgattt ctatttgggg aacaactctc 1380
tatcctcagg tagaagataa ggtagaaaat gac 1413

<210> 10
<211> 1380
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 10
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ttgacccatc agggagaaag tattgaaaat cgtttcatca aagagggtaa tcagctaccc 120
gatgagtttg ttgttatcga aagaaagaag cggagcttgt cgacaaatac aagtgatatt 180
tctgtaacag ctaccaacga cagtcgcctc tatcctggag cacttctcgt agtggatgag 240
accttgttag agaataatcc cactcttctt gcggtcgatc gtgctccgat gacttatagt 300
attgatttgc ctggtttggc aagtagcgat agctttctcc aagtggaaga ccccagcaat 360
tcaagtgttc gcggagcggt aaacgatttg ttggctaagt ggcatcaaga ttatggtcag 420
gtcaataatg tcccagctag aatgcagtat gaaaaaatca cggctcacag catggaacaa 480
ctcaaggtca agtttggttc tgactttgaa aagacaggga attctcttga tattgatttt 540
aactctgtcc attcaggcga aaagcagatt cagattgtta attttaagca gatttattat 600
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gaggatttaa aacagagagg aatttctgca gagcgtcctt tggtctatat ttcgagtgtt 720
gcttatgggc gccaagtcta tctcaagttg gaaaccacga gtaagagtga tgaagtagag 780
gctgcttttg aagctttgat aaaaggagtc aaggtagctc ctcagacaga gtggaaacag 840
attttggaca atacagaagt gaaggcggtt attttagggg gcgacccaag ttcgggtgcc 900
cgagttgtaa caggcaaggt ggatatggta gaggacttga ttcaagaagg cagtcgcttt 960
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gaattatcct atgatcatca aggtaaggaa gtcttgactc ctaaggcttg ggacagaaat 1200
gggcaggatt taacggctca ctttaccact agtattcctt taaaagggaa tgttcgtaat 1260
ctctctgtca aaattagaga gcgttccggg cttgcctggg aatggtggcg tacggtttat 1320
gaaaaaaccg atttgccact agtgcgtaag cggacgattt ctatttgggg aacaactctc 1380

<210> 11
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 11
gactaagctt gccaccatgg aaattaatgt gagtaaatta ag 42

<210> 12
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 12
ctgactcgag ttattttact gtaatcaagc catc 34

<210> 13
<211> 954
<212> DNA
<213> Artificial Sequence

<220>
<223> pSA-59 Aly insert

<400> 13
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aggcaagtac acgcacactc aactgggaat ccgcattcaa ccgtacagaa tgaagcggat 120
tatcattggc ggaaagaccc agaattaggt tttttctcgc acattgttgg gaacggatgc 180
atcatgcagg taggacctgt taataatggt gcctgggacg ttgggggcgg ttggaatgct 240
gagacctatg cagcggttga actgattgaa agccattcaa ctaaagaaga gttcatgacg 300
gactaccgcc tttatatcga actcttacgc aatctagcag atgaagcagg tttgccgaaa 360
acgcttgata cagggagttt agctggaatt aaaacgcacg agtattgcac gaataaccaa 420
ccaaacaacc actcagacca tgtggatcca tacccttact tggcaaaatg gggcattagc 480
cgtgagcagt ttaagcatga tattgagaac ggcttgacga ttgaaacagg ctggcagaag 540
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tgggtcaagt acaaggacac ttggtactac ttagacgcta aagaaggcgc aatggtatca 840
aatgccttta tccagtcagc ggacggaaca ggctggtact acctcaaacc agacggaaca 900
ctggcagaca agccagaatt cacagtagag ccagatggct tgattacagt aaaa 954

<210> 14
<211> 318
<212> PRT

<213> Artificial Sequence

<220>
<223> polypeptide of pSA-59 Aly insert sequence

<400> 14

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            20                  25                  30
Ser Thr Val Gln Asn Glu Ala Asp Tyr His Trp Arg Lys Asp Pro Glu
        35                  40                  45
Leu Gly Phe Phe Ser His Ile Val Gly Asn Gly Cys Ile Met Gln Val
    50                  55                  60
Gly Pro Val Asn Asn Gly Ala Trp Asp Val Gly Gly Gly Trp Asn Ala
65                  70                  75                  80
Glu Thr Tyr Ala Ala Val Glu Leu Ile Glu Ser His Ser Thr Lys Glu
                85                  90                  95
Glu Phe Met Thr Asp Tyr Arg Leu Tyr Ile Glu Leu Leu Arg Asn Leu
            100                 105                 110
Ala Asp Glu Ala Gly Leu Pro Lys Thr Leu Asp Thr Gly Ser Leu Ala
        115                 120                 125
Gly Ile Lys Thr His Glu Tyr Cys Thr Asn Asn Gln Pro Asn Asn His
    130                 135                 140
Ser Asp His Val Asp Pro Tyr Pro Tyr Leu Ala Lys Trp Gly Ile Ser
145                 150                 155                 160
Arg Glu Gln Phe Lys His Asp Ile Glu Asn Gly Leu Thr Ile Glu Thr
                165                 170                 175
Gly Trp Gln Lys Asn Asp Thr Gly Tyr Trp Tyr Val His Ser Asp Gly
            180                 185                 190
Ser Tyr Pro Lys Asp Lys Phe Glu Lys Ile Asn Gly Thr Trp Tyr Tyr
        195                 200                 205
Phe Asp Ser Ser Gly Tyr Met Leu Ala Asp Arg Trp Arg Lys His Thr
    210                 215                 220
Asp Gly Asn Trp Tyr Tyr Phe Asp Gln Ser Gly Glu Met Ala Thr Gly
225                 230                 235                 240
Trp Lys Lys Ile Ala Glu Lys Trp Tyr Tyr Phe Asn Glu Glu Gly Ala
                245                 250                 255
Met Lys Thr Gly Trp Val Lys Tyr Lys Asp Thr Trp Tyr Tyr Leu Asp
            260                 265                 270
Ala Lys Glu Gly Ala Met Val Ser Asn Ala Phe Ile Gln Ser Ala Asp
        275                 280                 285
Gly Thr Gly Trp Tyr Tyr Leu Lys Pro Asp Gly Thr Leu Ala Asp Lys
    290                 295                 300
Pro Glu Phe Thr Val Glu Pro Asp Gly Leu Ile Thr Val Lys
305                 310                 315
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<210> 15
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 15
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<210> 16
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 16
gactctcgag ctatccatca gggcctaact cattaag 37

<210> 17
<211> 1377
<212> DNA
<213> Artificial Sequence

<220>
<223> pSA-60 PspA insert

<400> 17
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aaaaaatctg aagctgctaa gaaggcttac gaagaagcta aaaagaaagc agaagacgct 120
cagaaaaaat atgatgagga tcagaagaaa actgaggcaa aagcggataa ggaagcaaaa 180
gcatctgcgg aaatagataa agccacgttt gctgtacaaa gtgcgtatgt aaaatttta 240
aatgtccaat ctaatcgtca aatttcggag aatgaacgaa aaaaacaatt agcagaaata 300
gataaagaga tagagaatgc taaacaaaat ttacagaata aacaggaaga atttaataag 360
gttagagcag aagtaattcc tgaagcaaag gggttagctg ttactaaaca aaaagcggaa 420
gaagctaaaa aagaagcaga agtagctaag agaaaatatg attatgcaac tctaaaggta 480
gcactagcga agaaagaagt agaggctaag gaacttgaaa ttgaaaaact tcaatatgaa 540
atttctactt tggaacaaga agttgctatt gctcaacatc aagtagataa tttgaaaaaa 600
cttcttgctg gtgcggatcc tgatgatggc acaaaagtta tagaagctaa attaaacaaa 660
ggagaagctg agctaaacgc taaacaagct gagttagcaa aaaaacaaac agaacttgaa 720
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gctgaagctg agttggataa aaaagctgat gaacttcaaa ataaagttgc tgatttagaa 840
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caaagcgatt taaaagatgc tgaagaaaat aatgtagaag actatattaa agaaggttta 960
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gaaggcttag ataaagctct tactgataaa aaagttgaat taaataatac tcaaaaagca 1320
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<210> 18
<211> 459
<212> PRT
<213> Artificial Sequence

<220>
<223> polypeptide of pSA-60 PspA insert sequence

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1 5 10 15
Asp Ala Ala Val Lys Lys Ser Glu Ala Ala Lys Lys Ala Tyr Glu Glu

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            20                  25                  30
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        35                  40                  45
Lys Lys Thr Glu Ala Lys Ala Asp Lys Glu Ala Lys Ala Ser Ala Glu
    50                  55                  60
Ile Asp Lys Ala Thr Phe Ala Val Gln Ser Ala Tyr Val Lys Phe Leu
65                  70                  75                  80
Asn Val Gln Ser Asn Arg Gln Ile Ser Glu Asn Glu Arg Lys Lys Gln
                85                  90                  95
Leu Ala Glu Ile Asp Lys Glu Ile Glu Asn Ala Lys Gln Asn Leu Gln
            100                 105                 110
Asn Lys Gln Glu Glu Phe Asn Lys Val Arg Ala Glu Val Ile Pro Glu
        115                 120                 125
Ala Lys Gly Leu Ala Val Thr Lys Gln Lys Ala Glu Glu Ala Lys Lys
    130                 135                 140
Glu Ala Glu Val Ala Lys Arg Lys Tyr Asp Tyr Ala Thr Leu Lys Val
145                 150                 155                 160
Ala Leu Ala Lys Lys Glu Val Glu Ala Lys Glu Leu Glu Ile Glu Lys
                165                 170                 175
Leu Gln Tyr Glu Ile Ser Thr Leu Glu Gln Glu Val Ala Ile Ala Gln
            180                 185                 190
His Gln Val Asp Asn Leu Lys Lys Leu Leu Ala Gly Ala Asp Pro Asp
        195                 200                 205
Asp Gly Thr Lys Val Ile Glu Ala Lys Leu Asn Lys Gly Glu Ala Glu
    210                 215                 220
Leu Asn Ala Lys Gln Ala Glu Leu Ala Lys Lys Gln Thr Glu Leu Glu
225                 230                 235                 240
Lys Leu Leu Asp Ser Leu Asp Pro Glu Gly Lys Thr Gln Asp Glu Leu
                245                 250                 255
Asp Lys Glu Ala Ala Glu Ala Glu Leu Asp Lys Lys Ala Asp Glu Leu
            260                 265                 270
Gln Asn Lys Val Ala Asp Leu Glu Lys Gly Ile Ala Pro Tyr Gln Ile
        275                 280                 285
Lys Val Ala Glu Leu Asn Lys Glu Ile Ala Arg Leu Gln Ser Asp Leu
    290                 295                 300
Lys Asp Ala Glu Glu Asn Asn Val Glu Asp Tyr Ile Lys Glu Gly Leu
305                 310                 315                 320
Glu Gln Ala Ile Ala Asp Lys Lys Ala Glu Leu Ala Thr Thr Gln Gln
                325                 330                 335
Asn Ile Asp Lys Thr Gln Lys Asp Leu Glu Asp Ala Glu Leu Glu Leu
            340                 345                 350
Glu Lys Val Leu Ala Thr Leu Asp Pro Glu Gly Lys Thr Gln Asp Glu
        355                 360                 365
Leu Asp Lys Glu Ala Ala Glu Asp Ala Asn Ile Glu Ala Leu Gln Asn
    370                 375                 380
Lys Val Ala Asp Leu Glu Asn Lys Val Ala Glu Leu Asp Lys Glu Val
385                 390                 395                 400
Thr Arg Leu Gln Ser Asp Leu Lys Asp Ala Glu Glu Asn Asn Val Glu
                405                 410                 415
Asp Tyr Val Lys Glu Gly Leu Asp Lys Ala Leu Thr Asp Lys Lys Val
            420                 425                 430
Glu Leu Asn Asn Thr Gln Lys Ala Leu Asp Thr Ala Gln Lys Ala Leu
        435                 440                 445
Asp Thr Ala Leu Asn Glu Leu Gly Pro Asp Gly
    450                 455
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<210> 19

<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 19
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<210> 20
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 20
caaaattaga gaacgttccg ggcttgcctg ggaatgg 37

<210> 21
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 21
gcccggaacg ttctctaatt ttgacagaga gattacg 37

<210> 22
<211> 5
<212> PRT
<213> Streptococcus pneumoniae

<400> 22
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1 5

<210> 23
<211> 7
<212> PRT
<213> Streptococcus pneumoniae

<400> 23
Glu Asp Lys Val Glu Asn Asp
1 5

<210> 24
<211> 11
<212> PRT
<213> Streptococcus pneumoniae

<400> 24
Tyr Pro Gln Val Glu Asp Lys Val Glu Asn Asp

1 5 10

<210> 25
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 25
ctgaggatcc ttactatacc tgaggataga gagttgttc 39

<210> 26
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 26
gactggatcc ctatacctga ggatagagag ttg 33